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A

MONOGRAPH

OF THE

TROGONIDÆ,

OR

TROGONS.

BY

JOHN GOULD, F.R.S. &c.

TO BE COMPLETED IN FOUR PARTS.

PART IV.

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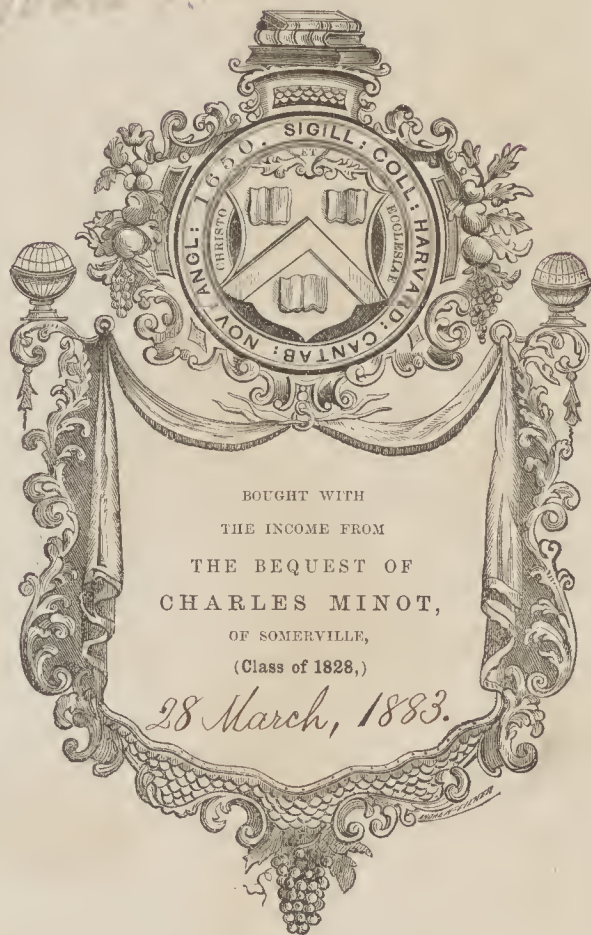
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with the List of Plates.

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A
MONOGRAPH
OF
THE TROGONIDÆ,
OR
FAMILY OF TROGONS.

BY
JOHN GOULD, F.R.S. &c.

2d ed.

LONDON:

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TO
HIS GRACE
THE DUKE OF ARGYLL, K.T., F.R.S., &c.,

IN TESTIMONY OF
APPRECIATION OF HIS LIFE-LONG INTEREST IN ORNITHOLOGY, AND WITH A DEEP SENSE OF THE
VALUE, IN THE ADVANCEMENT OF OTHER SCIENCES, OF THE ORIGINAL
RESEARCHES TO WHICH HE HAS DEVOTED THE
PORTION OF TIME WHICH COULD BE SPARED FROM THE DISCHARGE OF IMPORTANT
PUBLIC DUTIES,

This Second Edition of
A MONOGRAPH OF THE TROGONIDÆ,
OR FAMILY OF TROGONS,

IS DEDICATED,

BY

THE AUTHOR.

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P R E F A C E.

THE 'Trogonidæ' was the second Monograph undertaken by me, and was published in 1838. I quote the following phrases from my preface to the original edition, as it shows our position in regard to this family of birds nearly forty years ago, after the most strenuous exertions to arrive at a complete knowledge of them:—

“Having brought this Monograph to a close, I am led to hope that my labours in the elucidation of a tribe of birds hitherto involved in much confusion will not be destitute of some degree of value, more especially in the eyes of ornithologists, introducing to their notice, as it does, many new species, and clearing up the difficulties with which many of those even common in our cabinets have been previously surrounded,—difficulties arising from several causes, among which may be enumerated the differences in plumage which obtain so often between the males and females, as well as between the young males and the adults of the same sex, in some of the minor groups; to which may be added the circumstance of the subject not having been attempted by naturalists possessing command of those ample resources necessary for extricating the subject from the labyrinth of confusion in which it has long been involved.

“It would be presumptuous in me to say that this Monograph is fully completed, or that I have figured every existing species; on the contrary, I have reason to believe that many will yet be discovered, both in the Old and New World, particularly in those remote regions which civilized man has seldom, if ever, visited: but in order to render the work complete up to the present time, I have not only done my utmost to add every species to my own collection, but have visited all the principal Museums of Europe, both public and private, and, as in previous instances, have experienced the greatest kindness and cooperation from the various eminent naturalists, private individuals, and the officers of the natural-history department of every public institution. Indeed, without the liberality I have experienced, it would be impossible that a work

of this nature could have been successfully completed; and I am proud to bear my testimony to the liberal spirit which has been manifested towards me by the scientific world in general. Among those to whom I am especially indebted I may mention the Earl of Derby, Prince Massena, of Paris, M. Temminck, M. John Natterer, of Vienna, Dr. Lichtenstein, of Berlin, W. Swainson, Esq., Sir William Jardine, Bart., and T. C. Eyton, Esq. My thanks are also due to my friend Mr. Martin, of the Zoological Society of London, for the kind manner in which he has at all times rendered me his assistance in this and my other publications."

Of the honoured friends mentioned in the foregoing paragraph, only one, Mr. Eyton, remains to me; all the others, alas! have passed away. In writing again a preface to a Monograph of the Trogonidæ, it is impossible not to recall their memory with a sigh; but at the same time it would be wrong to allow regrets to mingle with the acknowledgments which are due to my friends and coadjutors of the present day. It is with pleasure that I recognize the fact that for every single student of ornithology to be found forty years ago, there are at least twenty now; and I cannot close these remarks without recording my obligations to Dr. Sclater, Mr. Salvin, and Mr. Bowdler Sharpe for the assistance they have rendered me in the preparation of this second edition. With the history of this family will also be remembered the names of Mr. Lawrence and Professor Baird in America, Dr. Finsch of Bremen, Herr A. von Pelzeln of Vienna, and especially Drs. Cabanis and Heine, who, in their well-known 'Museum Heineanum,' have given a very elaborate descriptive review of the family; and, although not acquiescing in all their conclusions, I must acknowledge my frequent obligations to this useful work.

Lastly I have to remark that, although I entitle this work a second edition of the Trogonidæ, it is in reality a new publication, all the plates having been redrawn, and many new species figured for the first time, so as to bring the history of the family down to the present day.

INTRODUCTION.

AT the commencement of the Introduction to the first edition I stated that, in selecting the family of Trogons as the subject of my second Monograph, I was influenced by the full conviction, not only that it was one fraught with interest, but that much was left buried in obscurity, which when brought to light would materially tend to the advancement of ornithology. That my language was justified has been amply proved during the course of nearly forty years which have elapsed since those words were written; for instead of the *thirty-four* different kinds then figured, we are now acquainted with *forty-six* species of Trogons, *thirty-three* of them being American, *eleven* Indian and Indo-Malayan, and *two* African.

As their general structure and their habits sufficiently indicate, the Trogons belong to the fissirostral tribe of the Insessores. Greatly insectivorous, they seize the flitting insect from the leaves of trees, which their wide gape enables them to do with facility; while their feeble tarsi and feet are such as to qualify them merely for resting on the branches as a post of observation whence to mark their prey, and to which, having given chase, to return. As in all other groups, however, we shall find modifications of the type, constituting the ground of generic or subgeneric divisions.

“The Trogons may dispute the palm of beauty with the Humming-birds. Their plumage in certain parts shines with metallic brilliancy, and exhibits all the colours of the rainbow. On other parts the tints, though opaque, are not less rich and splendid; but a very short neck, feet disproportioned to their figure and bulk, and a long and broad tail injure the harmony of their form, and give them a heavy port and aspect. Their

long attenuated feathers, with barbs disarranged and luxuriant, make them appear more bulky than they really are. These too are so feebly implanted, that they fall at the slightest agitation ; and their skin is so delicate that it will tear at the slightest tension."

"These birds are solitary and extremely jealous of their freedom. They never frequent inhabited or open tracts. They delight in the silence of deserts, where they even fly the society of their consimilars. The interior of the thickest forests is their chosen abode for the entire year. They are sometimes seen on the summit of trees ; but in general they prefer the centre, where they remain a portion of the day without descending to the ground, or even to the lower branches. Here they lie in ambush for the insects which pass within their reach, and seize them with address and dexterity. Their flight is lively, short, vertical and undulating. Though they thus conceal themselves in the thick foliage, it is not through distrust ; for when they are in an open space, they may be approached so nearly as to be struck with a stick. They are rarely heard to utter any cries, except during the season of reproduction ; and then their voice is strong, sonorous, monotonous, and melancholy. They have many cries, from the sound of one of which their name is derived."

"All those whose habits are known nestle in the holes of worm-eaten trees, which they enlarge with their bills, so as to form a comfortable and roomy residence. The number of eggs is from two to four ; and the young are born totally naked ; but their feathers begin to start two or three days after their birth."

The position of the Trogonidæ in the 'Systema Naturæ' has been, and still is, a subject of debate amongst ornithologists ; but that the family is a very homogeneous one is admitted on all hands. Professor Huxley, in his Classification of Birds (P. Z. S. 1867, p. 467), places the Trogons in the Coccygomorphæ, in which are associated a number of families of birds under the following arrangement :—

a. The first toe turned forwards, as well as the others.

Coliidæ.

b. The fourth toe temporarily or permanently turned backwards, as well as the first.

Musophagidæ.	Ramphastidæ.
Cuculidæ.	Capitonidæ.
Bucconidæ.	Galbulidæ.

c. The second, third, and fourth toes turned forwards, the first backwards.

Alcedinidæ.	Meropidæ.
Bucerotidæ.	Momotidæ.
Upupidæ.	Coraciidæ.

d. The first and second toes permanently turned backwards, the third and fourth forwards.

Trogonidæ.

From this it will be seen that the Trogonidæ stand alone in this last group in the curious arrangement of the toes. Other differences of internal structure are also observable, amongst which may be mentioned the presence of the basipterygoid processes in the skull, which are not seen in the other families mentioned above.

Mr. Wallace, in his admirable paper on a natural arrangement of birds (Ann. N. H. 1856, vol. xviii. p. 197), has the following remarks on the Trogons, which he places in the Fissirostral series between the Goatsuckers (though at some distance from the latter) and the Jacamars, Motmots, &c. He writes:—"We must observe that many continental ornithologists still place the Trogons among the climbers, because they have their toes placed two and two, whereas those of the Kingfishers are arranged as in the majority of birds. But this is a point of detail which does not in the least affect the habits; for the toes are in both cases connected together at their basis so as to form a broad sole, giving a firm support to the bird without grasping. In both the leg is equally short and weak; and in both all the habits depending on the feet are precisely similar. Of how very little importance this change in the position of the toes is, unaccompanied by a change in their form, motion, or mode of connexion with each other, we may judge from the fact of there being species of Kingfishers and of Woodpeckers with only three toes, and which yet have no perceptible difference of habits from the rest of the family. It

would be as reasonable (and as unnatural) to withdraw these birds from their respective families and form of them a new three-toed family, as to separate the Kingfishers from the Trogons for the reasons assigned. As an instance how totally unable the Trogons are to use their feet for any thing like climbing, we may mention that the Trogons of South America feed principally on fruit, which one would think they would get by climbing or walking after if they could. But no; they take their station on a bare branch about the middle of the tree, and having fixed their attention on some particular tempting fruit they dart at it, seize it dexterously on the wing, and return to their original seat. Often while waiting under a fruit-tree for Chatterers or Pigeons, have we received the first intimation of the presence of a Trogon by the '*whir-r-r*' of its wings as it darted after a fruit. It is curious that this habit seems confined to the Trogons of America. In the East I have never yet observed it, and in the numerous specimens I have opened nothing has been found but insects. The African Trogons also appear to be wholly insectivorous."

Mr. Salvin has also kindly forwarded a note on the American Trogons, as they have come under his observation during his travels:—"In habits, Trogons are inactive whilst at rest, and they remain a considerable time almost motionless on the branch on which they are perched. The position of the body when thus resting is nearly vertical, and the tail hangs at but a slight angle from the vertical line. Their flight is short, rapid, and spasmodic; but they appear to seize most of their food, whether it be insect or fruit, when on the wing. Of the former, the larvæ are mostly preferred, and I have not unfrequently found large caterpillars in the stomachs of those I shot.

"Trogons are usually found singly or in pairs; but I have, when in pursuit of Quezals, on rare occasions seen several individuals at one time. Then, perhaps excited by the calls of the hunter, they evince unusual activity, and fly from tree to tree and branch to branch uttering a chattering note. Trogons always remain under the shade of the forest-trees. They are to be met with on boughs at some distance from the ground, but not in the tops of the trees."

Mr. Belt, in his entertaining work 'The Naturalist in Nicaragua' (pp. 122, 123), gives a note on the birds of this family met with in that country:—

"The Trogons are general feeders. I have taken from their crops the remains of fruits, grasshoppers, beetles, termites, and even small crabs and land-shells. Three species are not uncommon in the forest round San Domingo. In all of them the females are dull brown or slaty black on the back and neck, these parts being beautiful bronze-green in the male. The largest species (*Trogon massena*, Gould) is 1 foot in length, dark bronze-green above, with the smaller wing-feathers speckled white and black, and the belly of a beautiful carmine. Sometimes it sits on a branch above where the army of ants are foraging below; and when a grasshopper or other large insect flies up and alights on a leaf, it darts after it, picks it up, and returns to its perch. I sometimes found them breaking into the nests of the termites with their strong bills, and eating the large soft-bodied workers; and it was from the crop of this species that I took the remains of a small crab and land-shell (*Helicina*).

"Of the two smaller species, one (*Trogon atricollis*, Vieill.) is bronze-green above, with speckled black-and-white wings, belly yellow, and under-feathers of the tail barred with black. The other (*Trogon caligatus*, Gould) is rather smaller, of similar colours, excepting the head, which is black, and a dark blue collar round the neck.

"Both species take short, quick, jerky flights, and are often met with along with flocks of other birds (Flycatchers, Tanagers, Creepers, Woodpeckers, &c.), that hunt together, traversing the forests in flocks of hundreds belonging to more than a score of different species; so that whilst they are passing over, the trees seem alive with them.

"Mr. Bates has mentioned similar gregarious flocks met with by him in Brazil; and I never went any distance into the woods around San Domingo without seeing them. The reason of their association together may be partly for protection, as no rapacious bird or mammal could approach the flock without being discovered by one or other of them; but the principal reason appears to be that they play into each other's hands in their search for food.

“The Creepers and Woodpeckers and others drive the insects out of their hiding-places under bark, amongst moss, and in withered leaves. The Flycatchers and Trogons sit on branches and fly after the larger insects, the Flycatchers taking them on the wing, the Trogons from the leaves on which they have settled. In the breeding-season the Trogons are continually calling out to each other, and are thus easily discovered. They are called ‘viduas’ (that is, ‘widows’) by the Spaniards.”

The habit of consorting with other species was also noticed by my late friend John Natterer, who, as recorded in my first edition, informed me that he has seen them, though very rarely, congregating together, and more than one species in company—a circumstance which he considers may be accounted for on the principle that instinct leads them by some migratory movement to abandon one district at a certain season of the year in search of another where food is more abundant. These migrations, however, cannot be extensive, inasmuch as their wings are not adapted for a lengthened flight; besides which, every new district of any great extent presents us with its peculiar species; for example, none of the species inhabiting Mexico has been found in Brazil, and *vice versâ*.

The disposition of the feathers in the Trogonidæ is, according to Nitzsch, very similar to that prevalent in Passerine birds; but the neck is completely bare for a considerable space. The feathers are peculiarly soft and dense. The skin of the Trogon is perhaps thinner and more delicate than that of any other bird, and exceedingly difficult to remove, as the feathers drop out on the slightest touch; so that many a specimen is spoilt by the bird falling against a branch after being shot.

Much confusion has arisen in the synonymy of this family from a want of knowledge of the peculiarities of young and maturing birds. An examination of a very extensive series shows that the tail-feathers in young individuals are longer and more pointed; and when barred, the white bars are wider and less numerous. In the maturing bird the rectrices become squarer with successive moults, and the amount of white in the bars less in quantity. The wing-coverts, too, are subject to considerable variation in the young; these are frequently distinctly mottled with buff, as is shown in the Plates of *T. melanocephalus* and *Pharomacrus auriceps*, juv. These markings are replaced by the style of colours shown in the adult.

But the variation does not end here; for in such species as possess freckled coverts, the freckles become finer as the bird becomes older; and in those in which the coverts are black, the black becomes purer and more dense. In the case of *Pharomacrus mocinno* the young males in their first plumage are only distinguishable from the females by their more pointed rectrices; but after they assume the normal colour of the adult bird, the longer they live the longer and wider the tail-coverts become, the more prolonged the wing-coverts, and the more elevated the crest.

In the 'Comptes Rendus' for 1857 (vol. xlv. p. 688), Professor Bogdanoff gave an account of some chemical experiments which he made with the plumes of *Pharomacrus auriceps*, and showed that by immersing the red breast-plumes in spirit all the colour is taken out of them. The red pigment of these feathers he calls "zooxanthine." We remember that M. Jules Verreaux has also stated that in heavy storms of rain, the red breast of *Hapaloderma narina* at the Cape becomes completely washed out, and is renewed again in its full intensity only after an interval of some days. A similar fact is noticed in the red wing-feathers of the Touracous and in some of the American Chatterers (*Cotinga*).

In the fourth part of the 'Museum Heineanum,' Messrs. Cabanis and Heine introduce a number of new generic names into this family of birds. The value of these genera is very small. Thus we find *Pothinus* used for a group of yellow-breasted Trogons including *T. aurantiiventris*, a species perhaps not properly separable from *T. puella*, which is left in true *Trogon*. The rest of the yellow-breasted Trogons are placed in a genus *Aganus*; whilst for *T. surucura* another generic name, *Hapalophorus*, is proposed, the species being in fact most nearly allied to *T. aurantius*. For the black-tailed Trogons the generic name *Troctes* is proposed, and with more reason than in the other instances; but here a subdivision seems hardly admissible, seeing that an intermediate species exists in *T. clathratus*, which partly closes the gap between *Trogon* and *Troctes*. Lastly, the genus *Pharomacrus* is divided into two, *Tanypeplus* and *Pharomacrus*; but this, again, seems to me to be carrying generic subdivision too far.

The species described as *Trogon neoxenus* and placed, in the first part of this edition of the 'Trogonidæ,' under the new generic name *Euptilotis*, is also considered by Messrs.

Cabanis and Heine to be properly separable; and for it they proposed the name *Septuas* in the 'Museum Heineanum' (iv. p. 206). Of this scarce species two specimens, an adult and a young bird exist in the Berlin Museum, besides those mentioned in this work.

The following additional remarks on species are necessary, in order to include the observations of ornithologists which have been published during the progress of the present work through the press.

PHAROMACRUS.

P. MOCINNO.

Since the text accompanying the Plate of this species was written, I have noticed that Bonaparte in his 'Conspectus Volucrum Zygodactylorum,' p. 14, adopts the specific name *mocinno*, thus furnishing further evidence in favour of the priority of that name over his title of *paradiseus*.

P. AURICEPS.

A name (*P. heliactin*) has been proposed by Messrs. Cabanis and Heine (Mus. Hein. iv. p. 207) for the Ecuadorean race of *P. auriceps*. It is stated to be smaller than the more northern bird, but not otherwise different. As specimens from Antioquia are intermediate in size, and as size alone is a specific character of very doubtful value, I think that the Ecuadorean bird had best be considered merely a race of *P. auriceps* and not a true species. In like manner the *P. xanthogaster* described by Counts Turati and Salvadori (P. Z. S. 1874, p. 652), I have little doubt, is a variety of *P. auriceps*, but of interest when the relationship of *T. aurantiiventris* to *T. puella* is considered.

TROGON.

T. CALIGATUS.

To the synonymy of this species the name *T. concinnus* must be added; this name was proposed by Mr. Lawrence for a bird from Panamá which must certainly be considered a young male of *T. caligatus*.

T. MASSENA.

Costa-Rica specimens of this species are said by Messrs. Cabanis and Heine to be smaller than Mexican ones, and to show signs of a white breast-band. These authors suggest that, should these differences prove to be constant, the Costa-Rican bird be called *T. hoffmanni*. I have examined a large series from all parts of Central America, and fail to find any justification for separating the southern bird.

During the progress of the present work, additional information has been published on the two following species, which I now add:—

TROGON PUELLA.

The range of this species is now known to be much more extensive than formerly supposed. Its occurrence in Mexico is assured by the receipt of specimens from Señor De Oca, from the neighbourhood of Jalapa. In Guatemala *T. puella* is found both in Vera Paz and in the forests of the great volcanoes of Agua and Fuego, as well as those of the low-lying lands bordering the Pacific. From Costa Rica many specimens have been sent, collected chiefly in the forests stretching towards the Atlantic Ocean. Lastly the most southern point whence I have seen specimens is the volcano of Chiriqui.

TROGON MELANOCEPHALUS.

Mr. Salvin writes to me, "Of this species the following localities have to be recorded in addition to those mentioned in your book:—Merida in Yucatan, where Dr. A. Schott obtained specimens, one of which we possess through the kindness of the Smithsonian Institution; in Guatemala it is a scarce bird, and we have but one specimen, obtained at Choctum in the lowlands of Vera Paz; in Honduras *T. melanocephalus* would appear to be commoner, as the late Mr. G. M. Whitely obtained many examples of it near Medina on the Atlantic side; on the Pacific side of the same country I once met with several birds near La Union in the Bay of Fonseca; Mr. Belt met with it at Chontales; and I have seen several examples from Costa Rica, which appears to be the southern limit of its range."

In general terms, the Trogonidæ may be said to be distributed at the present day throughout the forest-countries of the Indo-Malayan Region, Equatorial and South Africa, and

the Neotropical or South-American Region. The range of the family in past periods of the earth's history appears to have been much more extensive, as M. Alphonse Milne-Edwards has identified two humeri as belonging to a species of Trogon, which were found in the Miocene formations of the Allier, in France. These he described in his work 'Oiseaux Fossiles de la France,' ii. p. 395, as belonging to a species which he proposed to call *Trogon gallicus*.

In America the Trogonidæ are strictly confined to the warmer parts of the southern continent, and some of the West-India Islands; the most northern part where they are found in Mexico appears to be Mazatlan on the Pacific, and the valley of the Rio Grande on the Atlantic side. Thence they spread southwards over the whole intertropical portion of South America, and as far south as the extension of the wood-region of the southern provinces of Brazil. Trogons are absent from the more southern portion of the continent, as well as from the western coasts of Chili and Peru. In the West Indies the two largest islands, Cuba and San Domingo, have each a peculiar species; but none have yet been noticed in any of the other islands, not even in Jamaica or Port Rico, both of which possess forests suitable for their sustenance. From the Antilles proper I exclude the island of Trinidad and Tobago, which belong zoologically to South America. In Trinidad two species identical with continental ones occur.

SYNOPSIS OF THE TROGONIDÆ.

SPECIES OF THE NEW WORLD.

THE ORBITS ALWAYS COMPLETELY FEATHERED.

A. Bill moderately stout ; maxilla with a single terminal notch ; wing- and tail-coverts more or less elongated.

PHAROMACRUS.

*a*¹. Occipital crest well developed ; four central tail-coverts far exceeding the rectrices. 1. *mocinno*.

*b*¹. Occipital crest moderate ; tail-coverts shorter than, or hardly exceeding the rectrices.

*a*². Three outer rectrices terminally white.

*a*³. Occipital crest green ; base only of outer rectrix black 2. *antisianus*.

*b*³. Occipital crest golden green ; basal half of outer rectrix black 3. *fulgidus*.

*b*². Rectrices black.

*c*³. Bill yellow ; coverts a little longer than rectrices 4. *auriceps*.

*d*³. Bill red ; coverts shorter than rectrices 5. *pavoninus*.

B. Bill feeble ; maxilla with a single terminal notch ; wing-coverts not elongated ; tail-coverts only slightly so ; head with elongated lateral plumes EUPTILOTTIS.

A single species (*E. neoxenus*).

C. Bill moderate ; edges of both mandibles strongly serrated ; wing- and tail-coverts not elongated ; tail-feathers without prolonged terminal emarginations ; wing-coverts either wholly black or minutely freckled with black and grey ; throat and chest either green or blue or greyish black ; no subterminal black spot on outer web of the two outer rectrices on each side TROGON.

a. Bill moderate; three outer tail-feathers on each side beneath either terminally white or conspicuously banded with white; tail much rounded, lateral feather not reaching much beyond the middle of the tail.

*a*¹. Female brown or olive-brown above.

*a*². Belly red or deep orange.

*a*³. Male with a large square terminal white spot on each of the three outer rectrices on each side.

*a*⁴. Rest of these rectrices black 1. *mexicanus*.

*b*⁴. „ „ „ white, freckled with black 2. *ambiguus*.

*c*⁴. „ „ „ black, crossed with white bars 3. *elegans*.

*d*⁴. „ „ „ black, crossed with obsolete white bars 4. *personatus*.

*b*³. Male with three outer rectrices on each side black, conspicuously barred with white bars.

*e*⁴. Terminal white bar not wider than the rest.

*a*⁵. Belly red 5. *puella*.

*b*⁵. Belly deep orange 6. *aurantiiventris*.

*f*⁴. Terminal white bar wider than the rest 7. *collaris*.

*b*². Belly bright lemon yellow.

*c*³. Male with three lateral rectrices on each side, barred with equal black and white bars (except terminal white bar, which is wider); yellow of breast deeper 8. *atricollis*.

*d*³. White bars on tail wider than black ones, yellow of breast paler 9. *tenellus*.

*b*¹. Female leaden grey above.

*c*². Tail barred on three outer rectrices on each side in both sexes.

*e*³. Belly yellow.

*g*⁴. Head black 10. *caligatus*.

*h*⁴. Head blue.

*c*⁵. Wing-coverts mottled 11. *meridionalis*.

*d*⁵. Wing-coverts black 12. *ramonianus*.

*f*³. Belly red.

*i*⁴. Head and breast dark blue 13. *variegatus*.

*k*⁴. Head and breast with green shade 14. *behni*.

*d*². Tail in male with graduated white termination on three outer rectrices, in female barred.

*g*³. Belly yellow.

*l*⁴. Basal half of outer rectrix white 15. *viridis*.

*m*⁴. Base only of outer rectrix white 16. *chionurus*.

SYNOPSIS OF THE SPECIES.

xix

- h*³. Belly red 17. *bairdi*.
- e*². Tail of female, like that of male, not barred.
- i*³. Top of head blue.
- n*⁴. Belly yellow 18. *aurantius*.
- o*⁴. Belly red 19. *surucura*.
- k*³. Top of head dark leaden grey 20. *citreolus*.
- f*². Tail with square white terminations to the three outer rectrices in both sexes. 21. *melanocephalus*.
- b*. Bill strong; tail-feathers beneath either wholly black or very narrowly crossed with white bars; no terminal white patch; tail less rounded, lateral feather reaching far beyond middle of tail.
- g*². Tail with three outer feathers on each side narrowly barred with white 22. *clathratus*.
- h*². Tail wholly black beneath in male.
- l*³. Chest with white pectoral band.
- p*⁴. Tail short, central rectrices with black terminal band above . . . 23. *melanurus*.
- q*⁴. Tail long, central rectrices wholly green above, without terminal black band 24. *macrurus*.
- m*³. Chest without white pectoral band 25. *massena*.
- D. Throat and chest grey; a subterminal black spot on the outer web of the two outer rectrices on each side. Tmetotrogon.
- A single species (*T. roseigaster*).
- E. Tail-feathers with prolonged terminal emarginations; wings and wing-coverts conspicuously marked with white Prionoteles.
- A single species (*P. temnurus*).

SPECIES OF THE OLD WORLD.

WITH A SPACE ROUND THE EYE MORE OR LESS DENUDED OF FEATHERS.

- F. Bill moderate, maxilla serrated as in *Trogon* Hapaloderma.
- a*. Wing-coverts indistinctly freckled with grey and black, and washed with green; basal half only of outer rectrix black 1. *narina*.
- b*. Wing-coverts finely freckled with grey and black; base only of outer tail-feather black 2. *constantia*.
- G. Bill robust, with a single terminal notch Harpactes.
- a*. Throat black.
- α*¹. Size large: wing exceeding 4 inches in length.

SYNOPSIS OF THE SPECIES.

- a^2 . Chest black.
- a^3 . With no white pectoral band; head black, washed with blood-red 1. *diardi*.
- b^3 . With a white pectoral band; head without rufous.
- a^4 . Larger, with a red nape-band 2. *kasumba*.
- b^4 . Smaller; no red nape-band 3. *fasciatus*.
- b^2 . Chest rosy 4. *ardens*.
- b^1 . Size small: wing not more than $4\frac{1}{2}$ inches in length.
- c^2 . Rump scarlet 5. *duvauceli*.
- d^2 . Rump sandy brown 6. *rutilus*.
- b . Throat rosy red.
- c^1 . Larger: wing $5\frac{1}{2}$ inches 7. *hodgsoni*.
- d^1 . Smaller: wing 5 inches 8. *erythrocephalus*.
- c . Throat yellow.
- e^1 . Head green; breast yellow, with a dull green pectoral band.
- e^2 . Larger: wing $5\frac{1}{2}$ inches 9. *reinwardti*.
- f^2 . Smaller: wing 5 inches 10. *mackloti*.
- f^1 . Head yellowish; breast orange, with no pectoral band 11. *oreskios*.

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PHAROMACRUS AURICEPS,
IMMATURE MALE.

J. Gould & Hart del et lith.

Walter imp.

PHAROMACHRUS AURICEPS.

Immature Male.

It is not a little surprising that, out of the multitude of skins of the members of this family of birds that have arrived in this country during the last twenty years, not more specimens of the immature, or what, perhaps, ought to be called the "second dress" of these Trogons should have come to light. That Trogons don a very peculiar and pleasing garb for a short time of their existence is very evident. We see this strikingly illustrated in the youthful bird figured in the accompanying Plate; while a specimen of about the same age, and exhibiting a similar character of markings, is figured in my Plate of *Trogon melanocephalus*. The same kind of plumage is put on by the Indian Trogons, as is evidenced by the young bird figured in the Plate of *Harpactes reinwardti*.

I have never set myself up as a systematist; but yet I have never been forgetful of the importance of small characters in the great and difficult task which lies before all ornithologists—I mean the establishment of a purely natural system of birds. To arrive at this desirable result the works of specialists are necessary, especially those which take the form of that most useful of all works, a complete monograph of a family or order of birds; but in all my writings I have endeavoured to remember that a natural system of birds can only be developed by some master mind, who will take into consideration every single aspect of the study, and blend into one harmonious whole the elements of classification contained in the science of ornithology—that is to say, oology, osteology, internal anatomy, &c. For such a study the variation of plumage, too often neglected, affords most satisfactory connecting-links between families and genera of birds; and it is for this reason that I made such a particular point of figuring all the young birds possible in my recent work on the Birds of Great Britain; and in the present volume it will be found that I have also given illustrations of the immature plumage of the Trogons wherever practicable.

The youthful dress of the Trogonidæ is perfectly unique, as far as I am aware, in the whole Avian series; and, from the rarity of immature specimens in collections, I do not doubt that it is only put on for a very short time, as is the case with the Flycatchers. And it is the more remarkable because in the case of other Fissirostral Picariæ such as the Kingfishers, Motmots, Jacamars, Rollers, &c. (birds somewhat allied to the Trogons), we do not find any such striking difference between the adult and young plumages.

The specimen figured is one in my own collection, and was sent from Merida by Mr. A. Goering.



TROGON TENELLUS, Cab.

J. Gould & W. Hart del. et lith.

Walter imp.

TROGON TENELLUS, *Cabanis*.

Graceful Trogon.

SPECIFIC CHARACTER.

Trog. splendide aurato-viridis, capite et jugulo vix saturationibus; fronte angustâ, loris et facie laterali cum gutture toto nigris; fasciâ pectorali albâ vix distinctâ; corpore reliquo subtus latè aurantiaco-flavo; alâ nigrâ, primariis angustè albo limbatis; tectricibus alarum minimis dorso concoloribus, reliquis et secundariis extus albido transversim vermiculatis; rectricibus duabus mediis cuprescenti-aureis nigro terminatis, duabus proximis nigris extus cuprescenti-aureis, reliquis versus basin pogonii interni nigris, albo latè terminatis et albo latè fasciatis. Rostrum flavum, versus basin virescens.

Adult Male.—Above metallic green, richer on the head, upper breast, rump, and upper tail-coverts, and having a slightly golden appearance on the back and sides of the breast; a narrow frontal line, lores, sides of the face, and throat black; least wing-coverts green, like the back, the remainder coarsely vermiculated with greyish white and black lines, as also are the secondaries; all the rest of the coverts and quills black, the primaries narrowly edged with white externally; centre tail-feathers of a burnished copper-colour, with a terminal band of black, the next two black on the inner web and at the tip and coppery on the outer web only; three outer tail-feathers broadly tipped with white and banded with black and white, the bases of the inner webs black, gradually increasing in extent towards the centre of the tail; under surface of body beautiful orange-yellow, paler and whiter near the green of the breast, forming a very indistinct pectoral band.

Total length $9\frac{1}{2}$ inches; wing $4\frac{3}{4}$; tail 6; tarsus $\frac{3}{4}$.

Trogon tenellus, Cab. J. f. O. 1862, p. 173.

—— *atricollis*, Sel. & Salv. P. Z. S. 1864, p. 364.—Gray, Hand-l. B. i. p. 83.

I BELIEVE this species to be distinct from *Trogon atricollis*, though undoubtedly very closely allied. It is a smaller bird, and is to be further distinguished by the more distinct white barring of the tail-feathers, the white bars being rather wider than the alternate black ones.

“This race of *Trogon atricollis* was first characterized by Dr. Cabanis in the ‘Journal für Ornithologie’ for 1862, from a single example of a young male included in the collection formed in Costa Rica by Drs. Hoffmann, von Frantzius, and Ellendorf, which first made us acquainted with the ornithological riches of that, up to that time, unexplored country. Since this first specimen was obtained numerous others have been sent from Costa Rica, where it would appear to be by no means rare in certain districts. Other localities, mentioned in Mr. Lawrence’s list of Costa-Rica birds, published in the ‘Annals of the Lyceum of New York’ in 1868, are Guatil, Barranca, Angostura and Pacuare.

“Costa Rica, however, is not the most northern point of the range of this bird; for Mr. Belt, the author of the interesting book ‘The Naturalist in Nicaragua,’ found it during his stay at the mines of Chontales.

“Writing of it and of *T. caligatus*, he says (p. 122):—‘Both species take short, quick, jerky flights, and are often met with along with flocks of other birds—Flycatchers, Tanagers, Creepers, Woodpeckers, &c., that hunt together, traversing the forests in flocks of hundreds belonging to more than a score of different species The Flycatchers and Trogons sit on branches and fly after the larger insects, the Flycatchers taking them on the wing, the Trogons from the leaves on which they have settled. In the breeding-season the Trogons are continually calling out to each other, and are thus easily discovered. They are called “viadas” (that is, “widows”) by the Spanish.’”

"In Veragua *T. tenellus* appears to be quite abundant. Arcé, to whom we are chiefly indebted for a knowledge of the birds of that country, has sent us from time to time specimens from the Volcano of Chiriqui and San Miguel de Bagaba, as well as from Santa Fé, Santiago de Veragua, the Cordillera de Tolé, Chitra, and Calovevora. On the Isthmus of Panama it is also common, as M'Leannan procured many specimens at Lion-Hill Station, and two years ago I myself shot an example in the woods near Obispo Station. It was sitting motionless in an upright position, after the manner of its tribe, on one of the lower branches of a forest tree, my attention being attracted by its yellow breast. Two other localities where this bird is found on the isthmus remain to be stated—one being Chepo, where Arcé secured specimens, the other the falls of the river Truando, where Mr. C. J. Wood, who was attached to Lieut. Michler's exploring expedition, met with it. He says that 'it was seen only once in the Cordillera, and that it was very unsuspicious and easily shot.'"—SALVIN.

The single figure in the accompanying Plate is life-sized.

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TROGON ATRICOLLIS. *Vicill.*

TROGON ATRICOLLIS, Vieillot.

Black-throated Trogon.

SPECIFIC CHARACTER.

Trog. vertice, dorso pectoreque summo viridibus; tectricibus alarum et secundariis extus nigris cinereo vermiculatis; primariis extus albido limbatis; regione paroticâ guttureque nigris; torque pectorali albo indistincto; rectricibus duabus intermediis cuprescenti-viridibus, duabus proximis nigris externè viridibus, reliquis nigris albo latè terminatis albo et nigro transfasciatis.

Fœm. Capite, dorso, gutture et rectricibus sex intermediis brunneis, his nigro terminatis; rectricibus reliquis obsoletius fasciatis; ventre aurantiaco sordidiore.

Rostrum flavum, vix olivascens.

Adult male.—Beak yellow, clouded with olive; throat and ear-coverts black; chest, top of head, and entire upper surface green; two centre tail-feathers green, with slight bronzy reflections, the two next on each side black, with their extreme outer edges of the same green as the two middle ones, the tips of all being black, the three outer ones on each side black, tipped with white, and regularly barred on the outer web with black and white as well as towards the tip of the inner one; wing-coverts and secondaries black, finely and delicately freckled with grey; primaries black, with a narrow external edging of white; under surface fine orange, separated from the throat by an indistinct pectoral band of white; feet brown.

Female.—Head, throat, upper surface, and six middle tail-feathers brown, the latter slightly tipped with black, the remaining tail-feathers as in the male, but not so regularly barred; the wing-coverts freckled with brown on a black ground; the primaries black, margined on the outer edges with white; under surface orange, but not so pure as in the male.

Total length about 9 or 10 inches; wing $4\frac{1}{2}$; tail 6.

Yellow-bellied Green Cuckoo. Edwards, Gleanings Nat. Hist. pl. 331.

Couroucou à queue rousse de Cayenne. Buff. Pl. Enl. 736.

——— *orangé.* Levaill. H. Nat. Couroucous, p. 14, pl. 7, 8, 9.

Trogon rufus. Gm. S. N. i. p. 404.

——— *atricollis.* Vieill. N. Dict. d'Hist. Nat. viii. p. 318.—Id. Gal. des Ois. i. pl. 31.—Gould, Monogr. Trogon. pl. 8.—Gray, Hand-l. B. i. p. 83.—Scl. & Salv. Nomencl. Av. Neotr. p. 104.

——— *viridis.* Spix, Av. Bras. i. p. 50 (*nec* Linn.).

Trogonurus lepturus. Swains. An. in Menag. p. 331.

Trogon chrysochlorus. Natt. & Pelz. Sitz. Akad. Wien, xx. p. 49.—Pelz. Orn. Bras. p. 20.

——— *scalaris.* Licht. in Mus. Berol. (*fide* Cabanis).

Pothinus atricollis. Cab. & Heine, Mus. Hein. Th. iv. p. 180.

“THERE can be little doubt,” says Mr. Salvin, “that the figures of the old authors, Edwards, Buffon, and Levaillant, quoted above, all apply to this bird, and also that a strict application of the law of priority points to the exceedingly inappropriate title of *Trogon rufus*, bestowed upon it by Gmelin, as the name this bird ought to bear.

"Setting aside the name of *T. rufus* as inappropriate, and *T. lepturus*, proposed by Swainson, which is a pure synonym of *T. atricollis*, as well as the MS. title of Lichtenstein's quoted by Dr. Cabanis, the other names given to this bird all refer to races or supposed races occurring in different districts of its range. Thus the South-Brazilian bird has been separated by Herr von Pelzeln as *T. chrysochlorus*, and the Central-American as *T. tenellus* by Dr. Cabanis, Vieillot's name, *T. atricollis* being applicable to the race found in Guiana and the valley of the Amazons.

"Having on several occasions, both by myself and with Mr. Sclater, closely examined numerous specimens of this bird from all parts of its range with a view to test the right of these various races to rank as species, I have always come to the conclusion that such a rank could not be granted them without rendering it exceedingly difficult, if not impossible, to assign to every specimen its right name. To show how varied is the state of opinion on this point, I may add that Dr. Cabanis, Mr. Gould, and Mr. Lawrence, uphold the distinctness of *T. tenellus*, the two former rejecting *T. chrysochlorus* as distinct from *T. atricollis*. Dr. Finsch agrees with Herr von Pelzeln in maintaining the specific rank of *T. chrysochlorus*, suggesting (as it appears to me rightly) that the birds described in the 'Museum Heineanum' really were *T. chrysochlorus* and not *T. atricollis*. I think myself that the differences observable are so slight that they may be regarded rather as tendencies to vary in a particular direction in a particular locality than as fixed, definite, specific characters. At the same time I must say that, if their separation be maintained, the South-Brazilian has equal, if not stronger, claims to be considered distinct from the Guiana race than the Central-American has. The Guiana bird is in fact almost precisely intermediate between the races found in Brazil and Central America. The white bands of the tail are widest and fewest in *T. tenellus*, narrowest and most numerous in *T. chrysochlorus*. The central tail-feathers have a bluish shade in *T. tenellus*, and are most bronzy in *T. chrysochlorus*. The wing-coverts are coarsely mottled in the former, finely in the latter. In all these points *T. atricollis* is intermediate."

Leaving the northern form, *T. tenellus*, to be noticed in a separate article. I will now trace the range of *T. atricollis*, including with it *T. chrysochlorus*.

Buffon alludes to its occurrence in Cayenne. It also occurs in Demerara, where Schomburgk met with it; but westwards of this district I have not yet come across any recent allusion to its occurrence in Venezuela or Trinidad, though Levaillant mentions its presence in the latter island. Throughout the valley of the Amazons it is found apparently in abundance. Natterer obtained nine examples during his voyage at Nas Lages, Borba, Marabitanas, Cocuy, and Barra do Rio Negro; while on the Upper Amazons, or Solimoens, Spix met with it, and subsequently Mr. E. Bartlett within the frontiers of Peru at Chamicurros. In Southern Brazil Prince Maximilian found it at Bahia, whence, and also from Rio de Janeiro, numerous specimens are constantly sent to Europe. In the province of Sao Paulo Mr. J. F. Hamilton found it pretty generally distributed throughout the forest, but not abundant in any one locality. He adds that it is of rather solitary habits, and that he never saw two together. In the same district, at Ypanema, Natterer secured fifteen examples, and upon these he bestowed the name *chrysochlorus*, afterwards described by Herr von Pelzeln. *Trogon atricollis* is also found still further south, in the province of Rio Grande do Sul, whence Mr. Rodgers has sent us specimens.

The figures in the Plate are of the natural size.

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TROGON COLLARIS, Vieill.

J. Gould & W. Hart del et lith

Walter Inup

TROGON COLLARIS, Vieill.

Collared Trogon.

SPECIFIC CHARACTER.

Suprà aurato-viridis; reatricibus duabus intermediis aurato-viridibus nigro terminatis, duabus proximis nigris extus aurato-viridibus, reliquis nigro alboque transfasciatis; tectricibus alarum minimis dorso concoloribus, reliquis et secundariis flexuosis nigro alboque vermiculatis; primariis nigris extus albo limbatis; loris, regione parotica gulaque nigris; gutture et pectore superiore aurato-viridibus; torque pectorali albo; corpore reliquo subtilis coccineo.

Irides saturatè brunneæ; rostrum flavicanti-aurantiacum; pedes saturatè cinerei.

Fœm. Brunnea; torque pectorali albo; corpore reliquo subtilis coccineo; tectricibus alarum brunneis nigro vermiculatis; reatricibus tribus utrinque extimis nigro lineolatis et punctatis alboque terminatis.

Rostrum brunnescenti-aurantiacum.

Adult Male.—Crown of the head and whole of the upper surface rich golden green; throat and ear-coverts black; two middle tail-feathers golden green, the two next on each side golden green on their outer edge, the inner webs black, and the whole six tipped with black; the three outer feathers on each side strongly barred with black and white; primaries black with their outer edges white; secondaries and wing-coverts transversely waved with zig-zag lines of black and white; a semilunar collar of white separates the golden green of the chest from the abdomen, which, with the under tail-coverts, is scarlet; bill rich yellowish orange; irides dark brown; feet dark grey.

Female.—Head, chest, and upper surface of body brown; the two middle tail-feathers rich chestnut-brown, the two next on each side chestnut-brown on their outer webs and black on the inner, the three lateral feathers on each side freckled with black and tipped with white; a band of white separates the brown of the chest from the abdomen, which is scarlet as in the male; bill brownish orange.

Total length $9\frac{3}{4}$ inches; bill $\frac{5}{8}$; wing $4\frac{3}{4}$; tail $5\frac{1}{4}$; tarsi $\frac{5}{8}$.

Le Couroucou rosalba. Levaill. H. N. Couroucous, pl. 6.

Trogon collaris. Vieill. N. Dict. d'Hist. Nat. viii. p. 320.—Gould, Mon. Trog. ed. 1, t. 5.—

Gray, Hand-l. B. i. p. 82.—Scl. & Salv. Nomencl. Av. Neotr. p. 104.

——— *castaneus.* Spix, Av. Bras. i. p. 48, t. 37 (fem.).

——— *auratus.* Swains. An. in Menag. p. 329.

“——— *rosalba*, Cuv.” Hartl. Verz. Mus. Brem. p. 12.

Trogonurus collaris. Bp. Consp. Vol. Zyg. p. 14.

Trogon eytoni. Fraser, P. Z. S. 1856, p. 368.

——— *elegans.* Licht. in Mus. Berol. (*fide* Cabanis).

——— *erythrinus.* Licht. in Mus. Berol. (*fide* Cabanis).

——— *curucui*, Linn. Cab. & Heine, Mus. Hein. Th. iv. p. 177.

——— *exoptatus*, Cab. & Heine, Mus. Hein. Th. iv. p. 179.

——— *virginalis*, Cab. & Heine, Mus. Hein. Th. iv. p. 173.

THIS species, by some authors supposed to be the *Trogon curucui* of Linnæus (but doubtfully so, as it appears to me), was first certainly named by Vieillot in 1817, and Levaillant's figure of his “*Couroucou*

rosalba” referred to. It is quite possible that the *Couroucui* of Marcgrave, as well as the *Trogon brasiliensis viridis* of Brisson, also refer to the same species; but of this there appears to be less certainty. *Trogon collaris* has a very extensive range in South America. Levaillant’s “*Couroucui rosalba*” is said to have come from Cayenne; and in the adjoining country of Venezuela it is also found, as well as in the island of Trinidad, where Léotaud and also Mr. E. C. Taylor met with it. The Venezuela bird has been separated under the name *Trogon exoptatus* by Messrs. Cabanis and Heine; but, judging from a skin obtained by M. Goering at Caripé, I more than doubt the validity of this supposed species.

Mr. Salvin’s notes on the species are as follows:—“From the States of Columbia skins of *Trogon collaris* are not unfrequently sent in the collections made in the vicinity of Bogotá; and quite recently Mr. T. K. Salmon, who is now engaged in exploring the districts in the neighbourhood of Medellín, has sent a number of specimens. These differ to a slight extent from normal *T. collaris* chiefly in having the terminal white portion of the tail-feathers narrower. In this respect they stand in an intermediate position between *T. collaris* and the Central-American *T. puella*, in which the terminal white tail-band is almost of the same width as the rest of the bars of the tail. This bird has also received a name from Messrs. Cabanis and Heine, who call it *T. virginalis*, their description being based upon specimens obtained by Fraser at Pallatanga, in Ecuador. The difference, so far as I can see, is very slight, and traced from a very variable character in this group of the Trogonidæ. Passing on to Peru, Mons. Constantine Jelski met with *T. collaris* during his expedition to the district of Junin. The places where he collected specimens are recorded by Dr. Taczanowski as Monterico, Soriano, and Amable-Maria. Turning eastwards from this point into the valley of the Amazons we find that Mr. Bartlett met with it both on the Upper and Lower Ucayali and also at Chamieuros. Spix also obtained it at Tabatinga, and Natterer at Barra do Rio Negro. The latter traveller also sent specimens from the ‘Engenho do Capt. Gama’ and Villa Maria, in Mato Grosso. Lastly, in Eastern Brazil Prince Maximilian found it at Rio de San Mato, near Bahia; and under the name of *Trogon eytoni* it has been recorded by Fraser from Rio de Janeiro.

“Little has been noticed of the habits of *T. collaris*. Spix speaks of its food consisting of fruit and insects; and Léotaud gives the following note of its habits as observed by him in the island of Trinidad:—‘Ce joli *Couroucui* est sédentaire ici. Ses mouvements sont lents et rarement répétés; il semble ainsi ne renoncer qu’à regret à un repos que troubleraient déjà trop souvent les besoins de l’existence. Son cri est rond, mais peu sonore; il a cependant un timbre qui attire l’attention; on croit y découvrir une certaine crainte de rompre le silence si solennel de nos forêts; c’est le cri de certains oiseaux de proie nocturnes qui trouble à peine le calme de la nuit. Sa parure si brillante ne redouterait point le vif éclat de la lumière, et pourtant l’oiseau ne quitte jamais les endroits couverts et surtout éloignés et élevés. Sa nourriture consiste principalement en baies et en insectes.’”

The figures in the Plate are life-size.

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TROGON VARIEGATUS, Spix.

J. Gould & W. Hart del., et lith.

Walter imp.

TROGON VARIEGATUS, Spix.

Purple-breasted Trogon.

SPECIFIC CHARACTER.

Viridis; capite summo et pectore superiore purpureis, fronte nigricante; tectricibus alarum et secundariis extus nigro alboque flexuosè minutè vermiculatis, remigibus reliquis saturatè brunneis, extus albedo limbatis; rectricibus duabus intermediis chalybeo-viridibus nigro terminatis, duabus proximis nigris extus viridibus, reliquis nigris, latè albo terminatis et versus apicem latè nigro et albo transfasciatis; corpore reliquo subtus saturatè coccineo; tibiis nigris.

Irides saturatè brunneæ; rostrum flavicanti-album; pedes cærulescenti-cinerei.

Œcem. Fuliginoso-cinerea, caudâ brunneo tinctâ; alarum tectricibus albo fasciatis; pectore inferiore albo; rectricibus tribus externis utrinque extus albis nigro fasciatis.

Male.—Bill yellowish white; head and chest metallic purple merging into black on the forehead; ears, throat, back, and upper tail-coverts green; wing-coverts and secondaries minutely waved with zig-zag markings of black and white; two centre tail-feathers steel-green, tipped with black, the two next on each side black, with their outer edges green; the three outer feathers on each side black at the base and barred with white and black, ending in a square mark of white; the whole of the under surface deep scarlet; thighs black; tarsi bluish grey; irides very dark brown.

Female.—Head, chest, and upper surface of body dark sooty-grey, the wing-coverts distinctly barred with white; upper part of the abdomen white, merging into scarlet on the belly and under tail-coverts; tail deep sooty-grey with a tinge of brown, the three outer feathers barred with black on their outer edges.

Total length 9 inches; wing 4; tail 5; tarsi $\frac{5}{8}$.

Trogon variegatus. Spix, Av. Bras. i. p. 49, taf. 38 A.—Gould, Monogr. Trogon. ed. 1, pl. 5.

—Gray, Hand-l. B. i. p. 83.—Scl. & Salv. Nomencl. Av. Neotr. p. 104.

—*purpuratus.* Swains. An. in Menag. p. 330.

Trogonurus variegatus. Bp. Consp. Voluer. Zygod. p. 14.

—*purpuratus.* Bp. l. c. p. 14.

Hapalophorus variegatus. Cab. & Heine, Mus. Hein. Th. iv. p. 199.

THIS species has an extensive range over a large portion of the empire of Brazil, though it is doubtless found in the wooded rather than the open *campos* of that vast area. It is somewhat remarkable that Prince Maximilian von Neuwied makes no mention of it in his well-known works, especially as it seems to be by no means uncommon in the vicinity of Bahia, which was one of his chief collecting-grounds. Here it was that Swainson obtained the specimens he subsequently described as *Trogon purpuratus*, the types of which are still preserved in the museum of the University of Cambridge; and from the same district skins are sent in some numbers in the vast collections of bird-skins so constantly forwarded to Europe.

Though common in the province of Bahia, it may be doubted if *Trogon variegatus* extends its range into the more southern provinces of Brazil; but it certainly spreads over the central and western districts, as well as throughout the valley of the Amazons. Natterer, to whom alone we are indebted for any knowledge of the birds of the distant Brazilian province of Matogrosso, found it both at Cuyaba, Villa Maria, and Matogrosso, and then, after journeying down the river Madeira, he again met with it at Barra do Rio Negro, and subsequently at Cajutuba, near Pará. Mr. E. Bartlett secured specimens during his visit to the Upper

Ucayali, within the dominion of Peru ; and in the same Republic Mr. Henry Whitely found it in the valley of the Cosnipata."

I am indebted to Mr. Osbert Salvin for the accompanying note :—

"The name *variegatus*, bestowed by the traveller Spix upon this species, appears well chosen ; for the extent and character of the markings of the tail vary greatly, especially in specimens from Bahia. It may be from having seen a greater number of specimens from this district that these variations are more apparent in Bahian birds ; but I have not yet noticed them to nearly the same extent in specimens obtained from the western confines of the range of the species. Here the white bands of the tail appear to have assumed a more definite order, and specimens in which these bands are almost run together (as in some from Bahia) have not yet come under my notice. This constancy of the white bands of the tail of the Peruvian birds, if such it is, can hardly be held to be a specific character, seeing that *some* Bahia birds are precisely similar, while others differ considerably. Varying as this bird does, it is somewhat surprising that only one synonym has been proposed for it. I may add that I sincerely trust that it may long remain the only one !"

The three figures in the Plate are of the natural size.

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TROGON BEHMI, Gould.

TROGON BEHNI.

Behn's Trogon.

SPECIFIC CHARACTER.

Trog. suprâ splendidè aurato-viridis, cupreo nitens; uropygio, supracaudalibus et rectricibus duabus mediis splendidè viridibus, his nigro apicaliter fasciatis; duabus proximis nigris extûs splendidè viridibus, reliquis nigris albo terminatis et albo transversim fasciatis; alis nigris, tectricibus alarum minimis dorso concoloribus, reliquis autem et secundariis externè cinereis minutissimè nigro fimbriatis, primariis angustè albido limbatis; pileo cum cervice et pectore superiore cyanescenti-viridibus, his cupreo nitentibus; fronte, loris et facie laterali cum gutture toto nigris; torque pectorali albo distincto; corpore reliquo subtùs coccineo, hypochondriis cinereis; tibiis nigris; subalaribus et alâ subtùs cinerascenti-nigris, illis interioribus et rectricibus versus basin pogonii interni albis.

Adult male.—Crown of head, hind neck, and breast shining bluish green, with a golden gloss on the sides of the neck and breast, the lores, sides of face, and throat black; across the upper breast a white band; the remainder of the underparts crimson, the sides of the body grey; the thigh-feathers black; entire back and scapulars bright coppery green, with a golden gloss, shading off into metallic grass-green on the rump and upper tail-coverts; the smaller wing-coverts golden green like the back, the rest, as well as the outer web of the secondaries, grey, most finely and delicately freckled with blackish vermiculations, the remainder of the wing black, the primaries with a narrow external edging of white; two centre tail-feathers green, with a coppery gloss, and having a tolerably broad terminal band of black; the next two feathers black, with only the outer web coppery green; the rest black, broadly tipped with white, and distinctly banded across with white, the number of white bars increasing more on the outer feathers; under wing-coverts and inner lining of wing greyish black, the innermost of the former and the inner base of the quills white.

Total length 9 inches; culmen $\frac{5}{8}$; wing $4\frac{3}{4}$; tail 5; tarsus $\frac{1}{2}$.

Trogon behni. Gould, MSS.

WHEN Professor Behn, of Kiel, returned from America, he passed through London and showed me a Trogon, which he kindly left with me as a new and undescribed species. I saw at once that it was a striking bird and was remarkable for some red feathers in its crown. These, however, proved to have been surreptitiously added, as might have been expected; for nature would never have acted so inharmoniously as to have decorated any one of these green Trogons, all of them so perfectly of one type, with such an anomaly as a red crown! But, on mature consideration, I came to the conclusion that the species was distinct on other grounds; and I had a sketch of it prepared, and proposed to name the species after the discoverer: this promise I now fulfil.

During the long interval that has elapsed since the Plate was drawn, two specimens have come under my notice—one brought by Mr. Brydges from Bolivia, the other sent from Peru by Mr. Whitely. The latter bird is in the collection of Messrs. Salvin and Godman, and has much of the appearance of an old *Trogon variegatus*, being considered by Mr. Salvin to belong to that species. The Bolivian bird, however, is different, in the head and chest being green and not blue, while the back is of the richest bronzy or coppery green. As there is some doubt as to the Peruvian specimen, I wish it to be understood that the Bolivian bird, is the typical *Trogon behni*. This is the bird described in the present 'Monograph;' and the illustration here given has been prepared from the same specimen.

The principal figure in the Plate is of the size of life. I regret that, by a misprint, the title has been rendered *Trogon behmi* instead of *T. behni*.



TROGON MACRURUS, Gould.

TROGON MACRURUS, Gould.

Long-tailed Trogon.

SPECIFIC CHARACTER.

Capite corpore suprâ pectoreque splendidè aurato-viridibus, uropygio cærulescente; loris, regione paroticâ et gutture nigris; alis nigris, tectricibus lineis delicatis cinereis undatim vermiculatis; primariis extûs albo marginatis; torque pectorali albo; corpore subtûs intensè coccineo; caudâ nigrâ, rectricibus duabus intermediis splendidè virescenti-purpureis nec non utrisque proximis duabus ad marginem externum, reliquis guttulis cinereis adpersis; rostro flavo; pedibus plumbeis.

Head, and all the upper surface, as well as the chest, rich golden green, tinged with blue on the rump; lores, ear-coverts, and throat black, gradually passing into golden green; wings black, with the centre finely striated with irregular wavy lines of greyish white, and the primaries margined externally with white; across the breast a band of white, beyond which all the under surface is of a rich fiery scarlet; tail black, the two centre feathers and the external webs of the two next on each side glossed with greenish purple, the remainder powdered with very fine specks of greyish white; bill yellow; feet lead-colour.

Total length, 13 inches; bill $1\frac{1}{4}$; wing $6\frac{5}{8}$; tail 8; tarsi $\frac{3}{4}$.

Trogon macroura. Gould, Monogr. Trogon. ed. 1, pl. 17.

——— *macrurus.* Gray, Gen. B. i. p. 70.—Id. Hand-l. B. i. p. 81.—Scl. & Salv. Nomencl. Av. Neotr. p. 104.

Curucujus macrurus. Bp. Consp. Vol. Zygod. p. 14.

Troctes macrurus. Cab. & Heine, Mus. Hein. Th. iv. p. 203.

JUDGING from the very few instances in which *Trogon macrurus* has been met with by collectors since the species was first brought under notice in the first edition of the 'Monograph,' it would appear that the bird is very local, and ranges over a very limited area. Indeed I doubt whether it is to be found beyond the district included between the lower region of the river Magdalena and the Isthmus of Panama as far as the base of the mountainous region of Veragua. M'Leannan obtained specimens, forwarded both to Mr. Lawrence and to Messrs. Salvin and Godman, on the Panama-Railway line. The late Mr. Cassin says, in his account of the birds obtained during Lieut. Michler's survey of the Isthmus of Darien, that amongst some young birds he attributed to *T. massena*, obtained on the river Fernando and the delta of the Atrato, was one that might be the young of this species.

In the Museum Heineanum are two birds ascribed to *T. macrurus*, one young and one female, both of which are said to have come from Cartagena. Beyond these meagre facts nothing is known of this bird.

The accompanying Plate represents an old and a young bird, of the size of life.



TROGON CITREOLUS, Gould.

J. Gould & W. Hart del. et lith.

Walton imp.

TROGON CITREOLUS, Gould.

Lemon-breasted Trogon.

SPECIFIC CHARACTER.

Trog. corpore suprà guttureque cærulescenti-viridibus; rectricibus duabus intermediis ad apicem, proximarum duarum utrinque pogoniis internis, reliquisque ad basin nigris, his apicem versus albis; ventre citrino in aurantiacum vergente; alis brunnescenti-nigris, primariorum pogoniis externis albo fimbriatis; rostro cærulescenti-corneo; pedibus brunneis.

Fœm. Capite, gutture dorsoque saturatè cinereis; rectricibus sex intermediis brunnescenti-nigris; in reliquis mari simillima.

Male.—Crown of the head, neck, back, and throat bluish green; tips of the two middle tail-feathers, the internal web of the two next on each side, and the base of the remainder black, the rest of each feather white; abdomen lemon-yellow, passing into orange; wings brownish black, the outer webs of the primaries fringed with white; bill bluish horn-colour; feet brown.

Female.—Head, throat, and back dark grey; six middle tail-feathers brownish; in other respects the same as the male.

Total length $10\frac{1}{2}$ inches; bill 1; wing $5\frac{1}{4}$; tail 6; tarsi $\frac{5}{8}$.

Trogon citreolus. Gould, P. Z. S. 1835, p. 30.—Id. Monogr. Trog. ed. 1, pl. 13.—Gray, Hand-l. B. i. p. 82.—Scl. & Salv. Nomencl. Av. p. 104.

——— *lucidus.* Licht. in Mus. Berol. (*fide* Cabanis).

Agamus citreolus. Cab. & Heine, Mus. Hein. Th. iv. p. 197.

THIS interesting and very rare Trogon is a native of Mexico, and may be distinguished from most other known species by the delicate lemon-yellow of the under surface, by the greater extent of the white on the lateral tail-feathers, and by the uniform colouring of the central portion of the wing.

The foregoing paragraph relates all that was known of the species at the time of publication of the first edition of the 'Monograph;' but I have lately been indebted to my kind friend Mr. Salvin for the following account of the species:—

"Of this well-marked species but little is known. The original specimens, formerly in the collection of the Zoological Society, came from Mexico; but, beyond the indication of the particular places where the species occurs in that country, next to nothing has been added to its history. Herr Deppe, who so largely enriched the Berlin Museum with specimens of the natural objects of Mexico, obtained this bird at Tequistlan and Tehuantepec; and at this latter place Col. A. J. Grayson also met with it. The same careful explorer also says, in a note given in Mr. Lawrence's "Catalogue of the Birds of North-Western Mexico" in the second volume of the 'Memoirs of the Boston Society of Natural History,' that the bird is well distributed throughout the forests of the *tierra caliente* of that region, which includes the district round Mazatlan, where both Col. Grayson and Mr. Xantus procured specimens. Mr. Lawrence says that the collections sent from Tehuantepec by Prof. Sumichrast to the Smithsonian Institution contained numerous specimens of *T. citreolus*. At one time I thought that this Trogon might be included in the birds of Guatemala; but this supposition has not received actual confirmation, though I still think it far from improbable that the bird is to be found in the forests of the province of Soconusco, if not actually in Guatemalan territory. One point seems certain, that its range is restricted to the forests of the western slope of the Cordilleras, which spread out to the shores of the Pacific Ocean.

"It remains to be stated that Messrs. Cabanis and Heine, in their account of *T. citreolus*, place as a synonym *T. capistratus* of Lesson, described in the 'Revue Zoologique' for 1842, p. 136. But from the

locality (Realejo) in Nicaragua whence Lesson's bird was obtained, and the vagueness of the description, I am inclined to assign this name as a synonym of *T. melanocephalus*. The latter bird, as I know from personal observation, is quite common on the shores of the Gulf of Fonseca, Realejo being distant only a few hours' sail. However, Dr. Cabanis may be right; and in that case it is more than likely that the locality assigned to Lesson's specimen is erroneous, and that it really came from further up the coast."

The figures in the Plate are of the size of life, and represent the usual coloration of the bird.

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TROGON MERIDIONALIS, Sw.

J. Gould & W. Hart del. et lith.

Walter imp.

TROGON MERIDIONALIS, Swains.

Little Trogon.

SPECIFIC CHARACTER.

Trog. capite pectoreque purpureis, aliquando viridi tinctis; auribus guttureque nigris; dorso saturatè aureo-viridi; alis nigrescenti-brunneis, remigibus albo marginatis, secundariis tegminibusque pulverulenti-cinereis; ventre aurantiaco; rectricibus intermediis duabus duarumque utrinque proximarum pogoniis externis viridibus, harum pogoniis internis nigris, his omnibus nigro apiculatis, reliquis albo nigroque fasciatis.

Rostrum plumbeum, ad apicem pallidiùs; pedes saturatè plumbei.

Fœm. Saturatè cœruleo-cana, ventre aurantiaco; alis nigris, secundariis tegminibusque albo transversim lineatis; remigibus extimis utrinque tribus ad basin nigris, pogoniis externis albis nigro fasciatis.

Male.—Crown of the head and chest rich purple, changing to greenish purple in some specimens; throat and ears black; back and upper tail-coverts dark green tinged with gold; wings blackish brown, the primaries edged with white, secondaries and lesser wing-coverts finely powdered with grey; breast and underparts rich orange; middle tail-feathers deep green, two next on each side green on their outer webs and black on the inner, all six tipped with black, three outer feathers on each side strongly barred with lines of black and white; bill lead-colour, lighter at the tip; feet dark lead-colour.

Female.—Whole of the head, chest, back, and six middle tail-feathers dark bluish grey; the three lateral feathers on each side black at their base, their outer edges white barred with black; wings black, secondaries and lesser wing-coverts finely marked with transverse lines of white; under surface orange; bill dark horn-colour.

Total length $8\frac{3}{4}$ inches; bill 1; wing $4\frac{1}{2}$; tail $4\frac{3}{4}$ tarsi $\frac{1}{2}$.

Trogon meridionalis. Swains. An. in Menag. p. 332.

—— *sulphureus.* Spix, Av. Sp. Nov. vol. i. pl. 38, p. 48?—Scl. & Salv. Nomencl. p. 104.

——Gray, Hand-l. i. p. 83.

Aganus caligatus. Cab. & Heine, Mus. Hein. Th. iv. p. 186.

?—— *devillii.* Cab. & Heine, Mus. Hein. Th. iv. p. 191.

?—— *crissalis.* Cab. & Heine, Mus. Hein. Th. iv. p. 190.

?*Trogon violaceus.* Gm. Syst. Nat. i. p. 404.

Aganus violaceus. Cab. & Heine, Mus. Hein. Th. iv. p. 190.

Trogon sulphureus. Spix, Léotaud, Ois. Trin. p. 101.

This species is very sparingly dispersed over the northern parts of Brazil, but is more abundant in Cayenne, Trinidad, and the adjacent islands. It is one of the commonest species in our cabinets, there being few collections sent from the last-named countries which do not contain examples.

The birds figured by Dr. Spix under the name of *Trogon sulphureus* are in all probability intended for this species, but in several particulars do not accord with it: I have therefore considered it best to adopt the name assigned to it by Mr. Swainson, who has paid much attention to the South-American members of this group.

The sexes offer the usual differences in the colour of their plumage, the male being clothed above with rich green, while the female has the same parts dark bluish grey: the young during the first year are like the female.

Thus much, excepting the synonymy, was said in the first edition of this Monograph; and I really have not much more to add, further than that my figures are made from Trinidad specimens. In order to throw as much light as possible, on this somewhat intricate subject I have availed myself of Mr. Salvin's experience, which is embodied in the following note:—

“The first point to look to in determining a member of this very difficult section of the Trogonidæ is to see if the crown of the head is *black* or *blue*. If the former, the bird doubtless belongs to *T. caligatus*, *i. e.* the *caligatus* of the second edition of this work. If the head is blue the bird belongs either to *T. meridionalis*, to *T. ramonianus*, or to a race closely allied to one or other of these birds—the difference between the two named being further shown by the wing-coverts of the former being mottled grey and black, while in the latter these are almost wholly black. It is not always possible to distinguish birds belonging to the blue-headed group with certainty, as not unfrequently specimens occur which have the wing-coverts only slightly mottled, thus showing that indications are not wanting to prove that *T. meridionalis* and *T. ramonianus* gradually merge into one another. This fact determined Mr. Sclater and myself to place both under the name *T. meridionalis* in our ‘Nomenclator Avium Neotropicalium.’

“To *Trogon meridionalis* the name *T. violaceus* of Gmelin has been applied by several authors; but this is a point I think that can never be satisfactorily determined; and as Gmelin's name is introduced with a description so manifestly inaccurate, for instance where he speaks of its yellow eyebrows! the selection of the first name, about which there can be no doubt, is by far the preferable plan to be adopted. This undoubtedly is Swainson's title bestowed upon this bird in 1838. It has been suggested (Mon. Trog. ed. 1, t. 9) that Spix's name *T. sulphureus* might be intended for this species; and so far as the female is concerned I am inclined to think this may be so; but the male, I have less doubt, belongs to *T. atricollis*; so that the name *T. sulphureus* had best be dismissed also.

“Swainson's bird, which is still extant in the museum of the University of Cambridge, is said to have been obtained in the Bahama Islands by Mr. Lees. This locality is doubtless incorrect, as is also shown by other birds described by Swainson from Mr. Lees's collection, and there is every reason to suppose that the specimen really came from Trinidad or Venezuela.

Most unfortunately for the puzzling synonymy of this group of Trogons, Messrs. Cabanis and Heine did not consult the first Part of this edition of the ‘Trogonidæ’ when compiling their account of the family in the fourth part of the ‘Museum Heinecanum;’ its existence was doubtless unknown to them. They would probably have been saved the attempt made to fix the name *caligatus* to a blue-headed bird from Cartagena, and also the description of the true *T. caligatus* of Central America under the new name of *Aganus braccatus*. Other species of this form are described by the same authors, the validity of which I have no means of testing beyond the published descriptions. These are:—*Aganus lepidus*, from Ecuador, which appears to me more likely to be *T. caligatus* than any thing else; *Aganus crissalis*, from Bahia, whence I have never yet seen specimens (this bird is described as having a blue head); *Aganus devilli*, based upon a description by MM. Deville and Des Murs of a bird from Santa Maria, on the Upper Amazons, and supposed by them to be *Trogon meridionalis* of Swainson. Further research will be necessary to establish these supposed species.

“To M. Léotaud we are indebted for a knowledge of the habits of this bird, as observed by him in the island of Trinidad. He says it leads the same kind of life as *T. viridis*.”

The figures in the accompanying Plate are life-size, and from Trinidad specimens.

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HARPACTES ERYTHROCEPHALUS.

J. Gould & W. Hart del. et lith.

Walter imp.

HARPACTES ERYTHROCEPHALUS.

Red-headed Trogon.

SPECIFIC CHARACTER.

Harp. capite guttureque sordidè sanguineis, torque gutturali angusto albo; corpore reliquo subtùs coccineo; tergo arenaceo-castaneo; tectricibus alarum superioribus nigro alboque fimbriatis; remigibus nigris, extùs albo limbatis; rectricibus duabus mediis castaneis nigro apicatis, duabus proximis utrinque nigris, reliquis nigris, albo latè terminatis.

Fœm. Capite guttureque arenaceo-brunneo; torque pectorali magis distincto; tectricibus alarum brunneo nigroque fasciatis.

Rostrum brunneum; mandibularum basis et regio parotica nudæ coccineæ.

Male.—The head, throat, and chest dull red, with a narrow band of white separating the chest from the breast; the rest of the under surface bright scarlet; back and upper tail-coverts sandy-brown; the wing-coverts finely lined with black and white; primaries black, externally margined with white; two middle tail-feathers chestnut-brown tipped with black, the next two on each side wholly black, the rest black only at their base, with the remaining portion white; naked space round the eyes red; bill black.

Female.—Similarly clothed to the male, except that the whole head and chest are sandy brown, and the linear markings on the wing are brown on a black ground instead of white, which is characteristic of the male only.

Total length from 12 to 13 inches; wing 5; tail $6\frac{1}{2}$ to 7.

Trogon erythrocephalus. Gould, P. Z. S. 1834, p. 25.—Id. Monogr. Trogon. pl. 33.

——— *flagrans.* Müll. Tijdschr. N. G. 1835, p. 336, pl. 8. fig. 2.

Harpactes erythrocephalus. Sw. Classif. B. ii. p. 337.—Gray, Gen. B. i. p. 71.—Id. Hand-l. B. i. p. 84.

——— *flagrans.* Gray, Gen. B. iii. App. p. 4.—Bp. Consp. i. p. 151.

Pyrotrogon flagrans. Bp. Consp. Volucr. Zyg. p. 14.—Cab. & Heine, Mus. Hein. Th. iv. p. 160, note.

MESSRS. Cabanis and Heine, in their excellent account of the Trogonidæ in the 'Museum Heineanum,' separate *Pyrotrogon hodgsoni* and *P. erythrocephalus* as two distinct species, keeping the latter title for the Sumatran bird. They state that the latter is very like *P. hodgsoni*, but is smaller in every way, with a shorter wing and tail, the bill being a trifle shorter and stouter and brighter-coloured. As will be seen by a reference to the first edition of this 'Monograph,' the above remarks are very similar to those made by myself respecting these two species; but I have not been able since the publication of that opinion, to add to it either one way or the other; for, beyond the specimens submitted to me by Mr. Temminck, I have seen no more Sumatran examples. While admitting the smaller size and probable distinctness of the island form, I must remind ornithologists that it will probably have to bear the title of *H. flagrans* (Müll.), as my *H. erythrocephalus* came from Burmah, and the probability is that the Burmese and Nepalese Red-headed Trogons are not distinct from each other. The following are the comparative measurements of *H. hodgsoni* and Sumatran *H. erythrocephalus* :—

H. hodgsoni. Total length $13\frac{1}{2}$ inches; wing $5\frac{1}{2}$; tail 8; tarsus $\frac{3}{4}$.

H. erythrocephalus. Total length $11\frac{1}{2}$ inches; wing 5; tail $6\frac{1}{2}$; tarsus $\frac{3}{4}$.

The figures in the Plate are, as nearly as possible, of the natural size.

